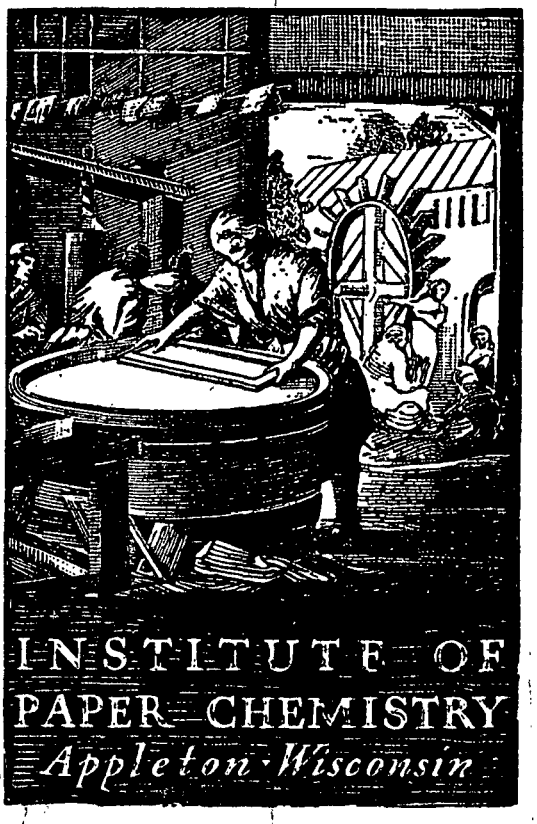

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 196

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

August 1, 1965

Your mill is identified by the following code letter in this report:

0

THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

Project 1108-13

Report 196

A Progress Report

to

FOURDRINIER KRAFT BOARD INSTITUTE, INC.

August 1, 1965

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THE INSTITUTE OF PAPER CHEMISTRY

Appleton, Wisconsin

CONTINUOUS BASE-LINE STUDY

INTRODUCTION

As requested by the Technical Division of the Fourdrinier Kraft Board Institute, Inc., the reports pertinent to the continuous base-line study on 42-lb. fourdrinier kraft linerboard have been prepared by The Institute of Paper Chemistry on a bimonthly basis instead of the previous monthly basis since August 1, 1961. The current report presents results obtained during the months of June and July, 1965.

PRESENTATION AND DISCUSSION OF TEST RESULTS

Each sample lot received for evaluation during June and July was evaluated for basis weight, caliper, bursting strength, and Elmendorf tearing strength. The average strength results for each mill may be seen in Table I and are graphically presented in Fig. 1 to 5. In addition to a comparison of the current mill averages for the various tests, Table I also shows the current F.K.I. averages, the cumulative F.K.I. averages, and F.K.I. indexes. For each test, the current mill average represents the average obtained on all sample lots evaluated from a given mill during the current period, the current F.K.I. average represents the average of the current mill averages, and the cumulative F.K.I. average represents the average of the current F.K.I. averages for the previous twelve months excluding the current period. The F.K.I. index expressed in per cent is the ratio of the current F.K.I. average to the cumulative F.K.I. average.

In Table II, a tabulation of the number of sample lots submitted by each mill during the current period is shown.

Supplementary to the summary of basis weight data given in Table I, a tabulation is given in Table III of the amount by which the current basis weight average for each mill varies from the 42-lb. specification set forth in Rule 41.

Shown below from Table I are the maximum and minimum current mill averages and also the current and cumulative F.K.I. averages for each test.

TABLE I

SUMMARY OF COMPOSITE MILL AVERAGES--JUNE AND JULY, 1965

Mill	Basis Weight, lb.	Caliper, points	Bursting Strength, p.s.i.g.	Elmendorf Tear, g./sheet	
				In Machine	Cross Machine
A	No samples submitted.				
B	42.6	13.4	108	265	320
C	42.1	13.4	118	381	400
D	42.3	12.9	103	307	367
E	41.8	12.8	113	382	413
F	42.4	12.5	115	295	356
G	42.8	12.3	114	362	379
H	42.7	13.4	118	328	391
I	42.9	12.9	116	342	393
J	41.7	12.7	112	344	365
K	No samples submitted.				
L	41.9	12.8	113	319	383
M	42.3	13.0	109	277	342
N	42.5	11.8	110	354	371
O	42.3	12.6	110	374	401
P	42.6	12.8	109	310	378
Q	42.6	12.3	115	294	343
S	42.6	12.4	106	358	391
T	No samples submitted.				
U	No samples submitted.				
V	42.4	12.8	106	321	390
W	42.5	12.4	117	337	375
Current FKI average:	42.4	12.7	112	331	375
Cumulative FKI average:	42.6	12.6	111	334	380
FKI index, %	99.5	100.8	100.9	99.1	98.7

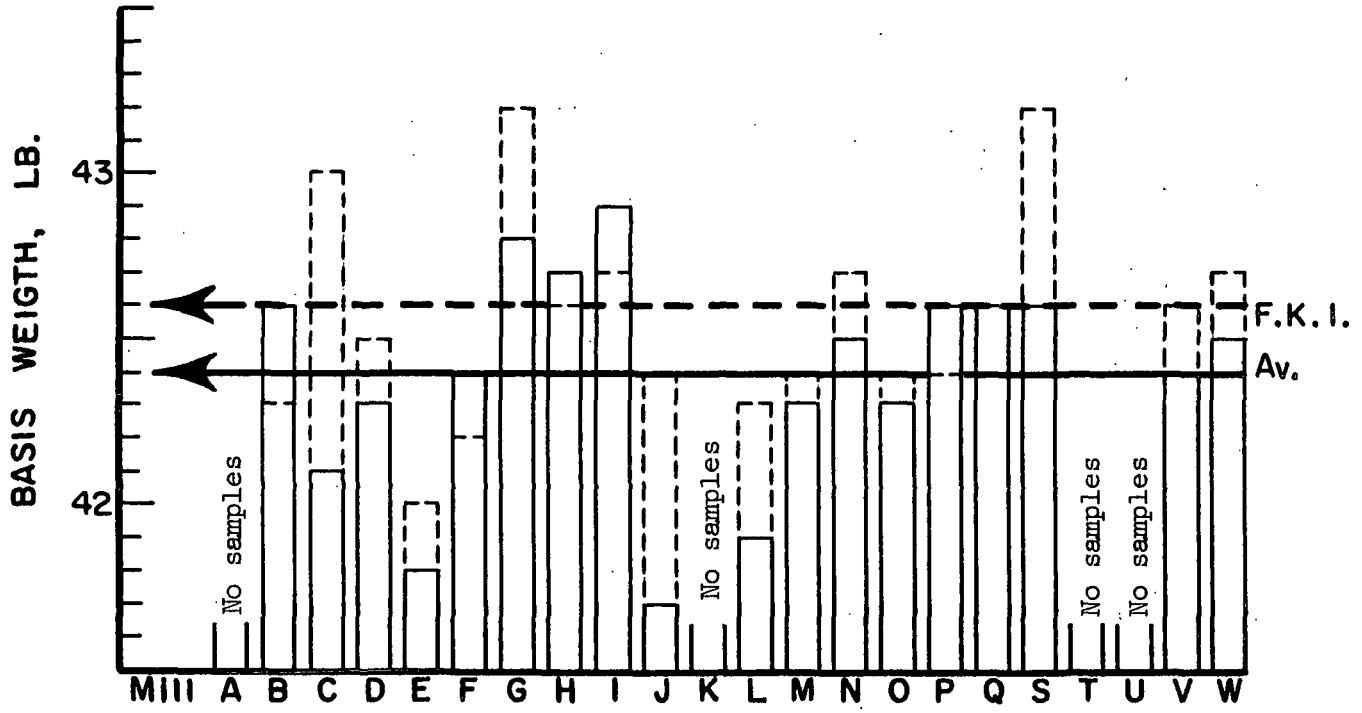

Figure 1. Comparison of Basis Weight Results

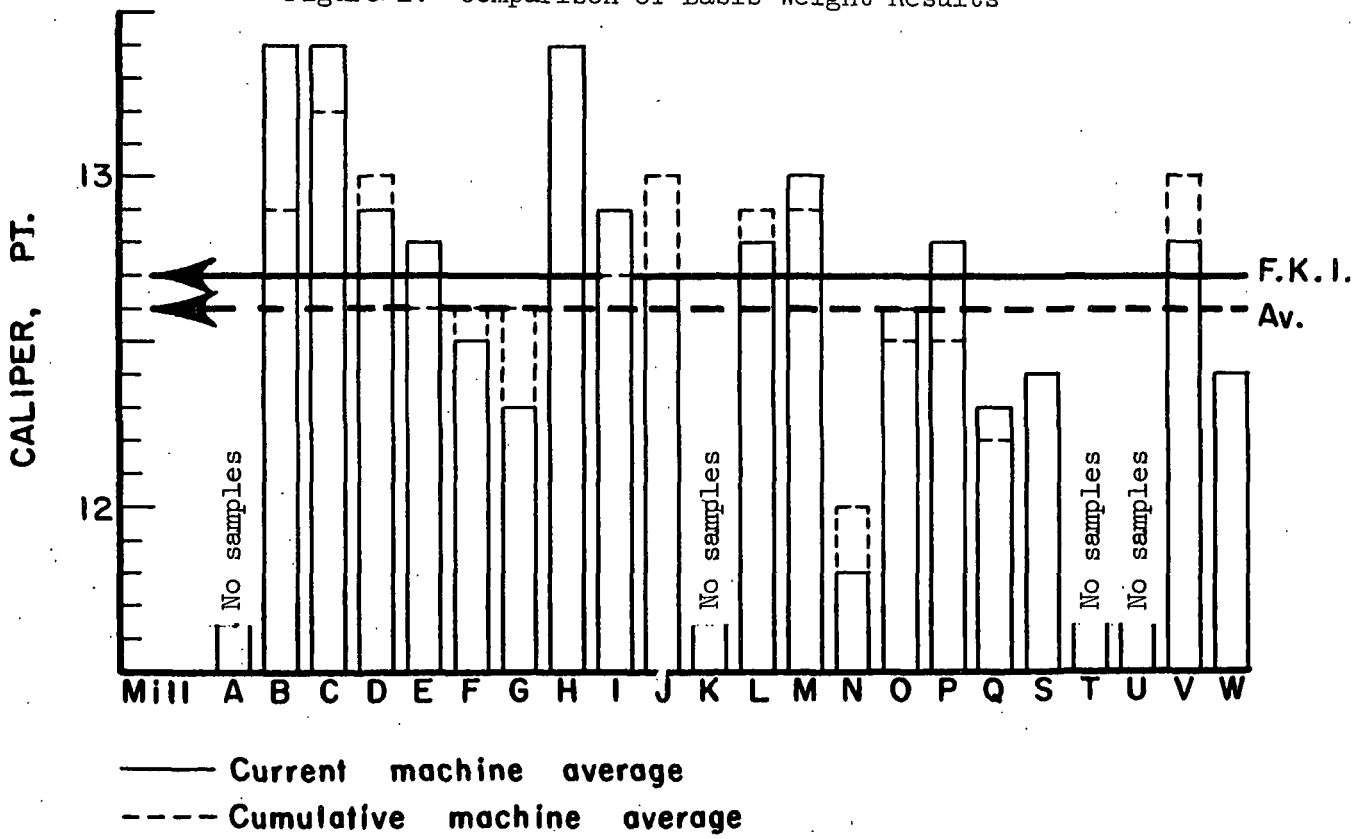

Figure 2. Comparison of Caliper Results

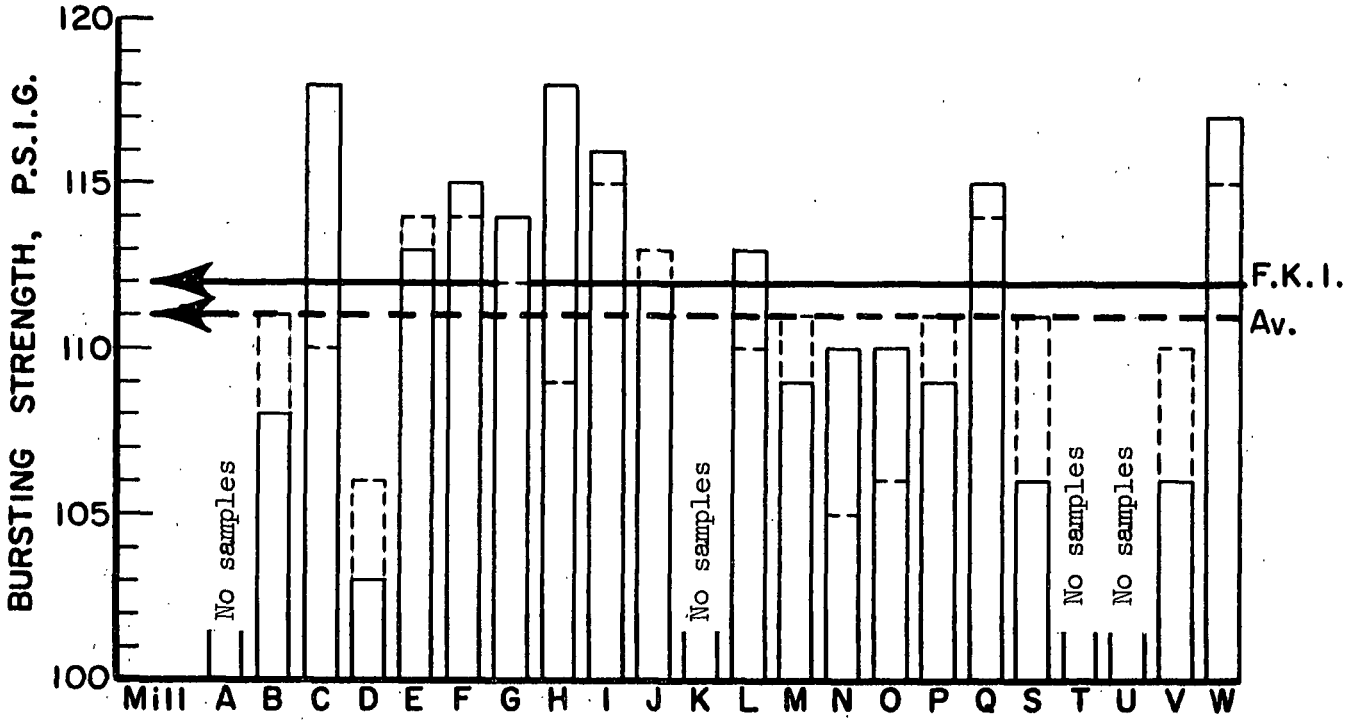

Figure 3. Comparison of Bursting Strength Results

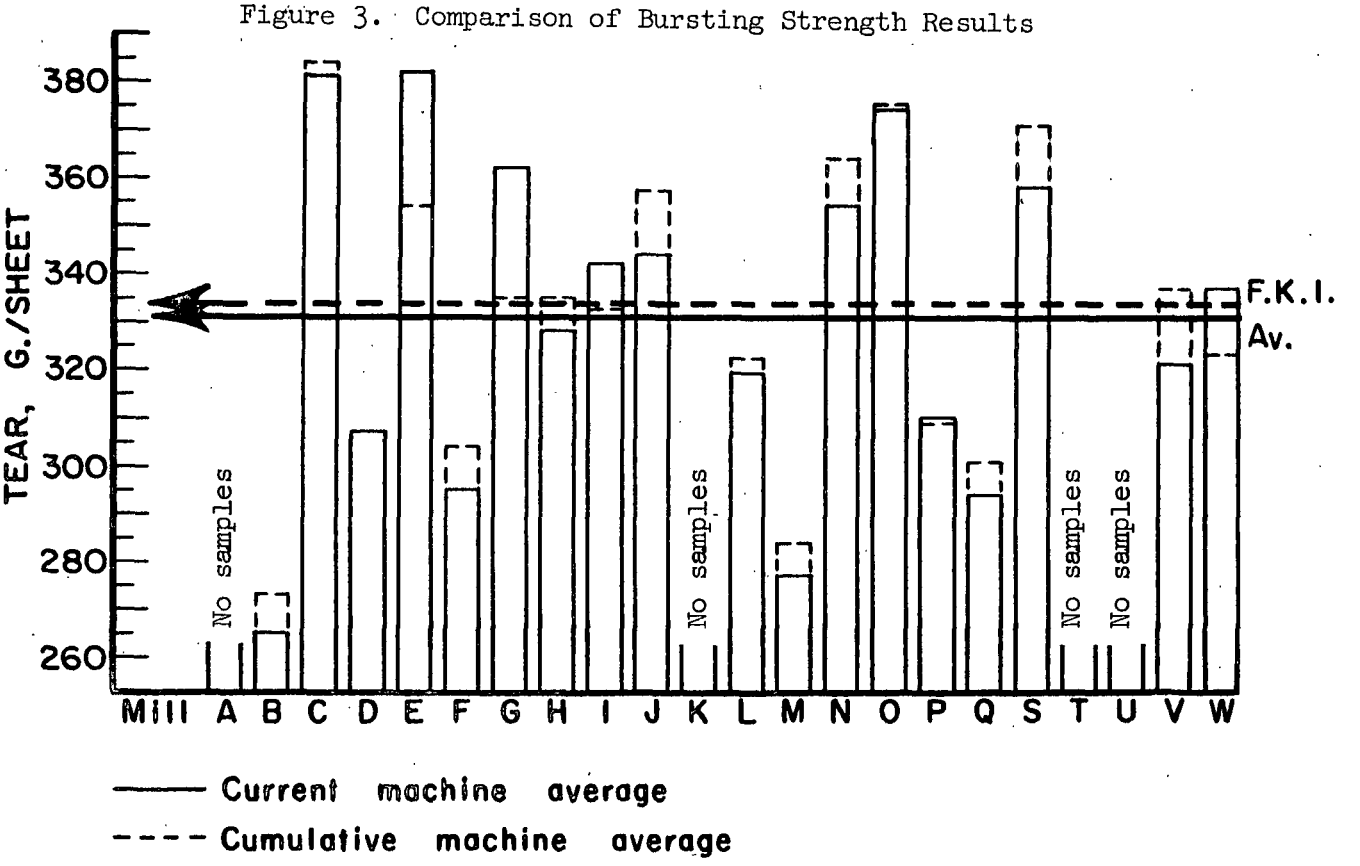

Figure 4. Comparison of Machine-Direction Tear Results

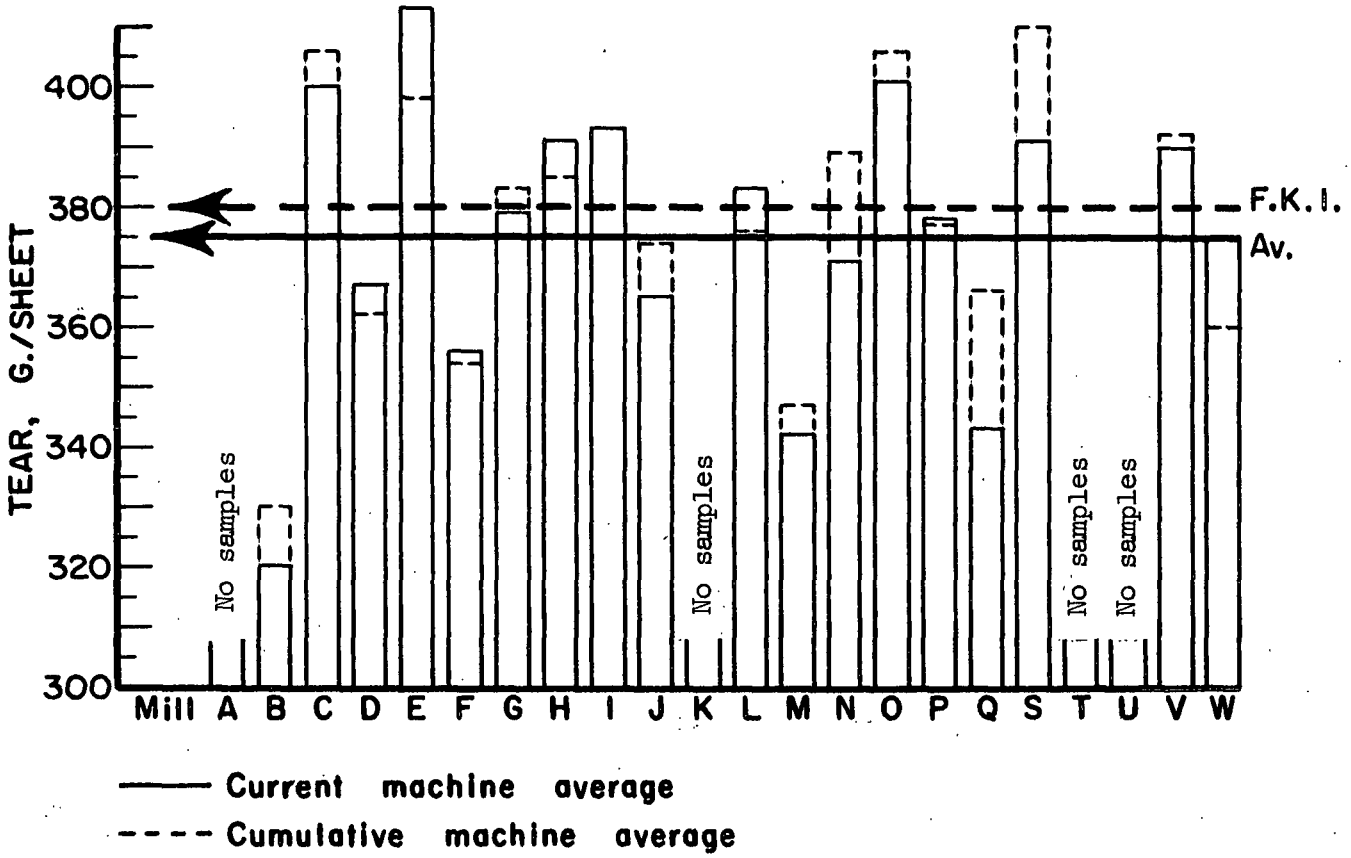

Figure 5. Comparison of Cross-Machine Direction Tear Results

TABLE II

NUMBER OF SAMPLE LOTS SUBMITTED BY EACH MILL
DURING JUNE AND JULY, 1965

Mill Code	Number of Sample Lots
A	0
B	9
C	4
D	7
E	11
F	8
G	6
H	9
I	7
J	4
K	0
L	8
M	9
N	5
O	5
P	9
Q	4
S	4
T	0
U	0
V	8
W	8
Total	125

TABLE III

PERCENTAGE DEVIATION OF CURRENT MILL AVERAGES
FROM 42-LB. BASIS WEIGHT SPECIFICATION
FOR JUNE AND JULY, 1965

Mill Code	Percentage Deviation
A	--
B	+1.4
C	+0.2
D	+0.7
E	-0.5
F	+1.0
G	+1.9
H	+1.7
I	+2.1
J	-0.7
K	--
L	-0.2
M	+0.7
N	+1.2
O	+0.7
P	+1.4
Q	+1.4
S	+1.4
T	--
U	--
V	+1.0
W	+1.2

Test	Current Mill Averages Max.	Min.	F.K.I. Averages Current	Cumulative
Basis weight, lb.	42.9	41.7	42.4	42.6
Caliper, points	13.4	11.8	12.7	12.6
Bursting strength, p.s.i.g.	118	103	112	111
Machine direction Elmendorf tear, g./sheet	282	265	331	334
Cross-machine direction Elmendorf tear, g./sheet	413	320	375	380

The test results obtained at the Institute and at the mill during June and July are given alphabetically in Tables IV to XXV for each mill. Included in each of these tables are the maximum, minimum, and average test data obtained at the Institute on each sample lot of linerboard. The data obtained at the Institute include also for each test the calculation of (1) a current mill average that represents the mean of the averages obtained on the individual sample lots of linerboard evaluated during the current period, (2) a cumulative mill average that represents the mean of the current mill averages for the previous twelve months excluding the current period, (3) a mill factor expressed in per cent that represents the ratio of the current mill average to the cumulative mill average, and (4) a mill index expressed in per cent that represents the ratio of the current mill average to the cumulative F.K.I. average. The term "mean" in the preceding discussion is synonymous with the simple arithmetic average. As mentioned above, the results presented in Tables IV to XXV also include data obtained at the mills. The mill data include for each test (1) the average result obtained on each sample lot of linerboard, and (2) a current mill average (calculated at the Institute) that represents the mean of the averages obtained on the individual sample lots

(Text is continued on page 28.)

TABLE IV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL A

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
No samples submitted.																										

TABLE V

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL B

4-17-65	----	1	42.4	42.0	42.1	42.7	+0.6	13.4	12.9	13.1	13.0	-0.1	121	89	106	101	-5	304	232	263[a]	298	+35	328	280	305[a]	360	+55
5-20-65	----	1	44.0	42.8	43.7	43.5	-0.2	14.7	13.5	14.0	13.5	-0.5	126	90	107	102	-5	320	248	286	315	+29	360	304	333[a]	387	+54
6- 8-65	----	1	44.4	42.4	43.2	43.4	+0.2	14.5	12.7	13.7	13.2	-0.5	122	81	102	100	-2	384	240	292[a]	279	-13	384	288	329[a]	361	+32
6-30-65	----	1	42.6	42.0	42.3	43.5	+1.2	13.9	12.9	13.5	13.0	-0.5	126	87	107	105	-2	344	192	255[a]	283	+28	328	264	304[a]	334	+30
7- 1-65	----	1	43.8	41.8	42.3	43.1	+0.8	14.0	12.8	13.1	12.6	-0.5	135	83	116	110	-6	352	208	266[a]	297	+31	336	304	324[a]	333	+ 9
7- 2-65	----	1	43.2	40.6	42.3	43.3	+1.0	13.4	12.4	12.9	12.5	-0.4	129	87	111	109	-2	296	192	247	271	+24	368	256	325[a]	339	+14
7- 3-65	----	1	43.6	42.0	42.4	43.3	+0.9	14.1	12.8	13.5	12.9	-0.6	125	85	107	103	-4	328	240	275[a]	285	+10	360	296	335[a]	350	+15
7-12-65	----	1	43.2	42.0	42.4	43.4	+1.0	14.0	13.1	13.6	13.2	-0.4	129	86	106	100	-6	312	224	260	289	+29	352	288	307[a]	355	+48
7-17-65	----	1	43.2	42.2	42.5	42.9	+0.4	13.7	12.2	12.8	12.4	-0.4	141	92	113	110	-3	264	224	243	271	+28	344	288	317[a]	343	+26
Current mill average:					42.6	43.2	+0.6			13.4	12.9	-0.5			108	104	-4			265	288	+23			320	351	+31
Cumulative mill average:					42.3					12.9					111					273					330		
Mill factor, %					100.7					103.9					97.3					97.1					97.0		
Mill index, %					100.0					106.3					97.3					79.3					84.2		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL C

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5-29-65	W.F.	-	42.6	40.4	41.8	42.3	+0.5	13.9	12.8	13.3	13.1	-0.2	134	81	118	110	-8	408	336	376[a]	368	- 8	448	352	395[a]	407	+12
5-29-65	W.F.	-	43.8	41.8	43.1	43.1	0.0	14.1	12.6	13.5	13.4	-0.1	131	102	118	110	-8	416	352	377[a]	386	+ 9	448	352	404[a]	423	+19
6-29-65	W.F.	-	42.8	40.8	41.9	42.3	+0.4	14.3	12.7	13.3	13.2	-0.1	146	100	117	109	-8	424	352	382[a]	369	-13	464	360	397[a]	402	+ 5
6-29-65	W.F.	-	42.2	40.2	41.6	42.0	+0.4	14.2	12.8	13.4	13.5	+0.1	133	95	118	110	-8	440	360	389[a]	373	-16	448	336	404[a]	415	+11
Current mill average:					42.1	42.4	+0.3			13.4	13.3	-0.1			118	110	-8			381	374	- 7			400	412	+12
Cumulative mill average:					43.0					13.2					110					384					406		
Mill factor, %					97.9					101.5					107.3					99.2					98.5		
Mill index, %					98.8					106.3					106.3					114.1					105.3		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL D

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5-7-65	----	1	43.2	41.6	42.2	42.2	0.0	13.0	12.0	12.5	12.5	0.0	114	68	97	105	+8	320	240	286	270	-16	352	288	325[a]	332	+7
5-20-65	----	1	43.8	41.4	42.5	43.1	+0.6	13.3	12.0	12.6	12.4	-0.2	123	79	104	108	+4	384	264	314	309	-5	480	352	388[a]	391	+3
5-25-65	----	1	44.0	42.0	42.7	42.9	+0.2	14.0	12.4	13.1	12.7	-0.4	124	85	106	110	+4	360	288	313[a]	291	-22	416	352	378[a]	373	-5
6-2-65	----	1	43.0	41.4	42.1	42.5	+0.4	13.8	12.8	13.2	12.6	-0.6	125	75	101	107	+6	368	256	307[a]	284	-23	400	328	349[a]	346	-3
6-11-65	----	1	43.0	40.8	41.7	42.4	+0.7	14.7	12.4	13.7	13.2	-0.5	118	78	98	105	+7	368	264	312[a]	296	-16	464	336	387[a]	370	-17
6-14-65	----	1	45.0	41.8	43.1	43.2	+0.1	14.0	12.2	13.2	12.9	-0.3	135	80	108	107	-1	368	280	317	305	-12	416	336	383[a]	380	-3
6-21-65	----	1	43.0	41.6	42.2	42.4	+0.2	13.0	11.9	12.2	12.0	-0.2	134	93	110	110	0	336	272	301	312	+11	416	336	356[a]	376	+20
Current mill average:					42.3	42.7	+0.4			12.9	12.6	-0.3			103	107	+4			307	295	-12			367	367	0
Cumulative mill average:					42.5					13.0					106					307					362		
Mill factor, %					99.5					99.2					97.2					100.0					101.4		
Mill index, %					99.3					102.4					92.8					91.9					96.6		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE VIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL E

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5-20-65	WF1S	1	42.8	41.8	42.1	42.5	+0.4	13.5	12.0	12.8	12.3	-0.5	149	86	118	113	-5	480	320	409[a]	340	-69	480	400	429[a]	391	-38
5-20-65	WF1S	1	42.0	41.0	41.6	41.8	+0.2	13.6	12.0	12.6	12.3	-0.3	148	73	110	108	-2	512	320	385[a]	324	-61	480	368	411[a]	353	-58
5-20-65	WF1S	1	42.0	41.0	41.7	41.9	+0.2	13.2	11.7	12.2	12.1	-0.1	135	84	112	105	-7	480	336	397[a]	334	-63	448	352	401[a]	375	-26
5-26-65	WF1S	1	43.8	41.8	42.3	42.5	+0.2	13.2	11.9	12.7	12.4	-0.3	148	75	118	119	+1	424	336	381[a]	347	-34	472	368	424[a]	401	-23
5-27-65	WF1S	1	43.8	41.8	42.3	42.9	+0.6	13.2	11.0	12.4	12.1	-0.3	147	80	118	121	+3	432	296	359[a]	333	-26	464	352	418[a]	407	-11
5-27-65	WF1S	1	42.8	40.2	41.6	41.7	+0.1	13.5	11.9	12.6	12.2	-0.4	147	83	109	116	+7	400	336	358	333	-25	448	368	419[a]	375	-44
6-12-65	----	1	42.8	41.6	42.2	41.9	-0.3	13.9	12.1	12.9	12.5	-0.4	139	88	116	116	0	440	328	387[a]	369	-18	448	336	407[a]	390	-17
6-12-65	----	1	42.8	41.8	42.1	41.6	-0.5	13.6	11.9	12.9	12.8	-0.1	143	91	116	119	+3	440	344	381[a]	387	+ 6	472	384	426[a]	415	-11
7- 6-65	----	1	44.2	42.4	43.3	43.4	+0.1	15.0	13.0	13.8	13.6	-0.2	159	84	115	112	-3	448	304	377[a]	387	+10	480	384	435[a]	421	-14
7- 6-65	----	1	41.6	39.6	40.2	40.7	+0.5	14.0	12.6	13.1	12.8	-0.3	141	87	115	112	-3	464	320	374	317	-57	432	352	396[a]	377	-19
7- 6-65	----	1	40.4	38.6	39.7	41.0	+1.3	13.8	11.8	12.5	12.4	-0.1	121	63	98	103	+5	448	352	392[a]	355	-37	416	344	374[a]	393	+19
Current mill average:					41.8	42.0	+0.2			12.8	12.5	-0.3			113	113	0			382	348	-34			413	391	-22
Cumulative mill average:					42.0					12.6					114					354					398		
Mill factor, %					99.5					101.6					99.1					107.9					103.8		
Mill index, %					98.1					101.6					101.8					114.4					108.7		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE IX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL F

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5-18-65	WF1S	2	43.2	42.0	42.4	43.0	+0.6	13.0	12.1	12.6	12.3	-0.3	141	86	111	108	-3	352	256	309	376	+67	448	336	377[a]	424	+ 47
5-30-65	WF1S	2	43.4	41.8	42.4	43.5	+1.1	13.0	12.0	12.5	12	-0.5	132	72	108	108	0	352	272	311	352	+41	416	320	361[a]	440	+ 79
6- 3-65	WF1S	2	43.2	41.8	42.3	43.2	+0.9	13.0	11.9	12.4	12.3	-0.1	129	87	110	106	-4	336	256	297[a]	328	+31	400	320	359[a]	440	+ 81
6-15-65	WF1S	2	42.8	41.8	42.2	43.0	+0.8	12.8	12.0	12.4	12	-0.4	133	83	111	107	-4	360	240	304	344	+40	384	320	361[a]	472	+111
6-24-65	WF1S	2	43.4	42.2	42.6	43.0	+0.4	13.0	12.1	12.6	12	-0.6	137	92	118	122	+4	344	232	281	320	+39	432	312	353[a]	392	+ 39
7- 3-65	WF1S	2	43.6	42.0	42.4	42.8	+0.4	12.9	12.1	12.5	12	-0.5	143	88	119	118	-1	336	248	287	296	+ 9	384	320	347[a]	384	+ 37
7- 7-65	WF1S	2	43.4	42.2	42.5	43.2	+0.7	13.0	12.0	12.6	12	-0.6	152	89	120	116	-4	352	248	287	288	+ 1	368	312	344[a]	400	+ 56
7-13-65	WF1S	2	43.6	42.2	42.6	43.5	+0.9	13.1	12.0	12.5	12.3	-0.2	146	100	121	118	-3	352	240	285	320	+35	384	320	350[a]	384	+ 34
Current mill average:					42.4	43.2	+0.8			12.5	12.1	-0.4			115	113	-2			295	328	+33			356	417	+ 61
Cumulative mill average:					42.2					12.6					114					304					354		
Mill factor, %					100.5					99.2					100.9					97.0					100.6		
Mill index, %					99.5					99.2					103.6					88.3					93.7		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE X

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL G

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
4- 2-65	W.F.	3	44.0	42.2	43.2	43.5	+0.3	12.8	12.0	12.2	12.3	+0.1	142	80	117	115	-2	400	304	350[a]	317	-33	472	336	376[a]	384	+ 8
4-29-65	W.F.	3	43.8	42.2	42.9	43.4	+0.5	12.5	12.0	12.2	12.1	-0.1	134	95	115	115	0	400	256	345	345	0	392	352	367[a]	400	+33
4-30-65	W.F.	3	43.8	42.2	43.0	43.4	+0.4	13.0	11.9	12.2	12.3	+0.1	136	96	113	111	-2	400	336	361	340	-21	472	336	391[a]	394	+ 3
5-10-65	W.F.	3	43.6	42.0	42.4	43.6	+1.2	12.9	11.9	12.3	12.1	-0.2	138	97	112	113	+1	416	320	373	355	-18	416	320	374[a]	395	+21
5-11-65	W.F.	3	44.0	42.0	43.1	43.7	+0.6	13.2	12.0	12.7	12.4	-0.3	123	99	113	113	0	432	336	380	328	-52	432	368	386[a]	378	- 8
5-29-65	W.F.	3	43.0	42.0	42.4	43.4	+1.0	13.0	12.0	12.4	12.1	-0.3	126	95	115	115	0	432	336	367	345	-22	416	352	377[a]	391	+14
Current mill average:					42.8	43.5	+0.7			12.3	12.2	-0.1			114	113	-1			362	339	-23			379	390	+11
Cumulative mill average:					43.2					12.6					112					335					383		
Mill factor, %					99.1					97.6					101.8					108.1					99.0		
Mill index, %					100.5					97.6					102.7					108.4					99.7		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL H

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5-14-65	WF1S	1	43.6	42.2	42.8	42.1	-0.7	13.6	12.4	13.1	12.7	-0.4	139	96	119	115	- 4	384	296	333	330	- 3	448	336	389[a]	390	+ 1
5-21-65	WF1S	1	43.8	42.0	43.1	42.2	-0.9	14.2	12.9	13.4	12.7	-0.7	135	97	117	113	- 4	376	280	336[a]	319	-17	448	352	399[a]	398	- 1
5-26-65	WF1S	1	43.8	42.0	43.0	42.9	-0.1	14.1	12.5	13.3	12.8	-0.5	142	81	120	113	- 7	400	272	338[a]	339	+ 1	480	360	404[a]	401	- 3
5-31-65	WF1S	1	43.4	41.4	42.4	42.5	+0.1	14.9	13.2	14.0	13.2	-0.8	126	86	104	105	+ 1	368	248	303	324	+21	392	320	365[a]	364	- 1
6-10-65	WF1S	1	42.8	42.0	42.5	42.9	+0.4	14.3	12.3	13.1	12.7	-0.4	141	101	119	113	- 6	456	264	332[a]	321	-11	432	352	395[a]	398	+ 3
6-16-65	WF1S	1	43.0	42.0	42.5	42.6	+0.1	14.1	12.6	13.4	12.9	-0.5	148	87	120	112	- 8	400	272	327[a]	364	+37	448	352	403[a]	427	+24
6-27-65	WF1S	1	43.6	42.0	42.8	42.8	0.0	14.1	12.2	13.2	12.9	-0.3	146	110	129	111	-18	392	280	325	367	+42	424	384	399[a]	426	+27
7- 2-65	WF1S	1	43.2	41.2	42.2	42.4	+0.2	14.8	13.0	13.9	13.3	-0.6	124	79	106	107	+ 1	368	272	321[a]	355	+34	408	344	365[a]	370	+ 5
7- 5-65	WF1S	1	43.8	42.2	43.1	43.0	-0.1	14.3	12.8	13.3	13.2	-0.1	141	104	125	114	-11	384	272	337	396	+59	448	352	398[a]	426	+28
Current mill average:					42.7	42.6	-0.1			13.4	12.9	-0.5			118	111	- 7			328	346	+18			391	400	+ 9
Cumulative mill average:					42.6					13.4					109					335					385		
Mill factor, %					100.2					100.0					108.3					97.9					101.6		
Mill index, %					100.2					106.3					106.3					98.2					102.9		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL I

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5-14-65	W.F.	2	45.8	43.4	44.6	44.2	-0.4	14.4	13.0	13.7	13.6	-0.1	145	92	115	116	+ 1	448	312	368[a]	353	-15	432	344	391[a]	431	+40
5-14-65	W.F.	2	45.4	43.2	44.4	44.1	-0.3	14.3	13.0	13.8	13.6	-0.2	135	98	115	114	- 1	448	296	355[a]	358	+ 3	448	360	401[a]	415	+14
6-10-65	W.F.	2	43.0	42.0	42.4	42.8	+0.4	13.0	12.0	12.5	12.2	-0.3	126	81	112	109	- 3	368	280	328[a]	320	- 8	408	360	385[a]	374	-11
6-10-65	W.F.	2	43.4	41.2	42.4	42.8	+0.4	12.9	11.8	12.5	12.3	-0.2	137	95	114	109	- 5	384	296	339[a]	323	-16	400	352	375[a]	371	- 4
7- 6-65	W.F.	2	42.8	41.6	42.1	42.6	+0.5	12.8	11.9	12.4	12.4	0.0	142	84	122	112	-10	368	264	316	306	-10	424	352	383[a]	368	-15
7- 6-65	W.F.	2	43.2	41.6	42.3	42.7	+0.4	12.9	11.7	12.4	12.6	+0.2	146	98	119	113	- 6	400	288	337[a]	320	-17	472	384	413[a]	382	-31
7- 9-65	W.F.	2	42.6	41.6	42.0	42.4	+0.4	13.7	12.2	12.7	12.7	0.0	136	94	114	107	- 7	432	296	347[a]	318	-29	448	376	405[a]	404	- 1
Current mill average:					42.9	43.1	+0.2			12.9	12.7	-0.2			116	111	- 5			342	328	-14			393	392	- 1
Cumulative mill average:					42.7					12.7					115					333					393		
Mill factor, %					100.5					101.6					100.9					102.7					100.0		
Mill index, %					100.7					102.4					104.5					102.4					103.4		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL J

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i.g. Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
6- 1-65	----	-	42.0	40.0	41.0	41.8	+0.8	13.0	12.0	12.6	12.6	0.0	134	90	111	114	+3	376	272	333	---		400	304	354[a]	---	
6-14-65	----	-	43.6	40.2	42.0	42.5	+0.5	13.0	12.0	12.6	12.4	-0.2	127	94	109	113	+4	400	288	346[a]	---		400	296	365[a]	---	
7- 9-65	----	-	43.4	39.8	41.9	42.4	+0.5	14.0	12.4	13.3	12.9	-0.4	138	92	113	114	+1	424	312	345[a]	---		432	336	368[a]	---	
7-16-65	----	-	43.2	41.0	41.9	42.4	+0.5	12.9	12.1	12.5	12.2	-0.3	135	94	114	108	-6	432	304	355[a]	---		432	336	372[a]	---	
Current mill average:					41.7	42.3	+0.6			12.7	12.5	-0.2			112	112	0			344	---				365	---	
Cumulative mill average:					42.4					13.0					113					357					374		
Mill factor, %					98.3					97.7					99.1					96.4					97.6		
Mill index, %					97.9					100.8					100.9					103.0					96.1		

TABLE XIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL K

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL L

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5- 4-65	W.F.	1	42.4	40.2	41.7	42.3	+0.6	13.4	12.0	12.9	12.7	-0.2	131	92	111	109	-2	384	264	325[a]	280	-45	480	352	399[a]	365	-34
5- 8-65	W.F.	1	43.0	41.2	41.8	42.6	+0.8	13.0	12.0	12.2	12.0	-0.2	129	104	114	110	-4	336	240	289[a]	256	-33	440	320	368[a]	348	-20
5-20-65	W.F.	1	41.8	40.0	41.1	41.7	+0.6	12.2	11.5	12.0	11.9	-0.1	136	95	113	113	0	336	264	307[a]	290	-17	448	352	402[a]	377	-25
5-27-65	W.F.	1	43.6	41.8	42.7	43.2	+0.5	13.8	12.5	13.2	13.1	-0.1	130	94	111	109	-2	368	248	311[a]	275	-36	432	320	377[a]	365	-12
6-25-65	W.F.	1	43.8	41.8	42.5	43.4	+0.9	13.9	12.7	13.2	12.9	-0.3	141	80	119	117	-2	416	304	355[a]	312	-43	456	368	403[a]	407	+ 4
6-10-65	W.F.	1	42.4	41.8	42.1	43.0	+0.9	13.9	12.0	13.3	13.1	-0.2	134	87	112	111	-1	400	272	333[a]	282	-51	416	328	381[a]	392	+11
6-14-65	D.F.	2	42.0	40.4	41.2	41.9	+0.7	13.6	12.0	12.7	12.5	-0.2	131	88	112	112	0	432	296	322[a]	282	-40	384	336	359[a]	377	+18
6-16-65	D.F.	2	43.4	41.8	42.4	43.1	+0.7	13.6	12.1	12.8	12.8	0.0	137	94	112	112	0	384	272	312[a]	300	-12	408	352	373[a]	383	+10
Current mill average:					41.9	42.7	+0.8			12.8	12.6	-0.2			113	112	-1			319	285	-34			383	377	- 6
Cumulative mill average:					42.3					12.9					110					322					376		
Mill factor, %					99.1					99.2					102.7					99.1					101.9		
Mill index, %					98.4					101.6					101.8					95.5					100.8		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XVI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL M

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5- 6-65	W.F.	1	43.2	41.8	42.2	41.7	-0.5	13.1	12.4	12.9	13.0	+0.1	121	90	108	108	0	320	232	270	257	-13	384	304	333[a]	344	+11
5-15-65	W.F.	1	43.6	42.2	42.7	42.4	-0.3	13.2	12.9	13.0	13.1	+0.1	142	90	118	119	+1	352	232	275	278	+ 3	416	320	355[a]	353	- 2
5-21-65	W.F.	1	44.0	42.0	42.9	42.5	-0.4	13.0	11.8	12.5	12.9	+0.4	122	93	108	112	+4	352	224	264	266	+ 2	352	312	333[a]	327	- 6
5-30-65	W.F.	1	43.0	42.2	42.5	42.2	-0.3	13.0	12.3	12.7	12.9	+0.2	122	92	111	112	+1	272	208	244	233	-11	352	312	327[a]	333	+ 6
6- 6-65	W.F.	1	43.0	41.0	41.8	42.3	+0.5	13.6	12.8	13.2	13.0	-0.2	127	88	108	105	-3	336	272	299	286	-13	368	336	353[a]	376	+23
6-15-65	W.F.	1	43.0	42.2	42.6	42.9	+0.3	13.8	12.9	13.3	13.3	0.0	123	84	104	105	+1	352	240	293[a]	281	-12	392	312	349[a]	373	+24
6-23-65	W.F.	1	42.4	41.0	41.7	42.2	+0.5	13.8	12.9	13.3	13.1	-0.2	130	74	109	104	-5	352	248	288[a]	288	0	376	320	347[a]	374	+27
6-28-65	W.F.	1	43.0	41.6	42.0	42.6	+0.6	13.9	12.9	13.3	13.1	-0.2	117	79	101	101	0	288	240	265	266	+ 1	368	288	331[a]	350	+19
7- 7-65	W.F.	1	42.6	40.8	42.0	42.7	+0.7	12.9	12.1	12.5	12.6	+0.1	133	89	111	110	-1	328	272	297[a]	282	-15	392	320	349[a]	373	+24
Current mill average:					42.3	42.4	+0.1			13.0	13.0	0.0			109	109	0			277	271	- 6			342	356	+14
Cumulative mill average:					42.4					12.9					111					284					347		
Mill factor, %					99.8					100.8					98.2					97.5					98.6		
Mill index, %					99.3					103.2					98.2					82.9					90.0		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XVII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL N

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
5-28-65	----	-	44.0	42.0	43.2	43.5	+0.3	12.1	11.3	11.7	11.5	-0.2	133	95	110	118	+8	360	280	337[a]	356	+19	408	312	365[a]	390	+25
6-3-65	----	-	45.8	40.0	42.0	42.2	+0.2	11.8	10.8	11.3	10.8	-0.5	136	84	111	109	-2	400	320	359[a]	363	+4	416	320	365[a]	375	+10
6-16-65	----	-	45.6	41.2	42.4	42.6	+0.2	11.9	10.8	11.3	11.1	-0.2	137	92	111	112	+1	392	272	354[a]	361	+7	424	336	387[a]	376	-11
6-28-65	----	-	43.0	41.6	42.4	42.8	+0.4	13.2	11.6	12.4	12.0	-0.4	131	85	107	111	+4	400	312	359[a]	352	-7	424	336	370[a]	376	+6
7-13-65	----	-	43.6	41.2	42.4	42.9	+0.5	12.9	11.6	12.4	11.9	-0.5	137	82	109	111	+2	400	320	359[a]	351	-8	416	304	369[a]	346	-23
Current mill average:					42.5	42.8	+0.3			11.8	11.5	-0.3			110	112	+2			354	357	+3			371	373	+2
Cumulative mill average:					42.7					12.0					105					364					389		
Mill factor, %					99.5					98.3					104.8					97.3					95.4		
Mill index, %					99.8					93.7					99.1					106.0					97.6		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XVIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL O

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.t.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
6- 1-65	W.B.	-	43.8	41.8	42.5	42.4	-0.1	13.7	12.4	13.0	12.3	-0.7	127	92	112	110	-2	432	352	379[a]	336	-43	472	352	403[a]	389	-14
6- 2-65	W.B.	-	43.8	42.0	42.6	42.7	+0.1	13.7	12.2	12.8	12.5	-0.3	128	87	108	105	-3	496	352	407[a]	365	-42	496	328	404[a]	396	- 8
6-21-65	W.B.	-	42.6	41.0	41.9	42.4	+0.5	13.2	12.1	12.7	12.6	-0.1	129	94	113	108	-5	424	320	360[a]	324	-36	432	360	397[a]	375	-22
6-26-65	W.B.	-	43.6	41.6	42.3	42.7	+0.4	12.9	11.2	12.1	12.0	-0.1	130	84	107	107	0	400	312	344[a]	313	-31	432	360	385[a]	383	- 2
7- 7-65	W.B.	-	43.6	40.6	42.1	42.5	+0.4	12.7	11.8	12.2	12.4	+0.2	127	97	112	109	-3	448	312	381[a]	351	-30	480	360	415[a]	388	-27
Current mill average:					42.3	42.5	+0.2			12.6	12.4	-0.2			110	108	-2			374	338	-36			401	386	-15
Cumulative mill average:					42.4					12.5					106					375					406		
Mill factor, %					99.8					100.8					103.8					99.7					98.8		
Mill index, %					99.3					100.0					99.1					112.0					105.5		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XIX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL P

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i.g. Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
5-18-65	WFlS	1	44.0	42.2	43.1	42.8	-0.3	13.0	12.0	12.4	12.3	-0.1	132	88	110	111	+1	360	256	306	330	+24	416	344	385[a]	403	+18
5-25-65	WFlS	1	43.8	42.0	42.9	42.9	0.0	13.2	12.5	13.0	12.8	-0.2	130	94	112	109	-3	352	224	279	316	+37	448	328	361[a]	396	+35
6- 1-65	WFlS	1	44.0	42.0	43.0	42.6	-0.4	13.8	12.6	13.2	12.4	-0.8	124	91	105	104	-1	384	264	316	347	+31	432	336	376	389	+13
6- 8-65	WFlS	1	42.2	40.6	41.6	42.4	+0.8	13.4	12.2	12.8	12.5	-0.3	127	90	107	106	-1	344	256	302[a]	338	+36	392	336	358[a]	411	+53
6-15-65	WFlS	1	42.8	40.6	42.0	42.7	+0.7	13.8	12.1	12.8	12.3	-0.5	128	87	106	104	-2	368	256	313[a]	341	+28	424	336	381[a]	433	+52
6-22-65	WFlS	1	43.6	41.4	42.7	42.9	+0.2	13.6	12.5	13.0	12.7	-0.3	138	88	108	107	-1	368	296	327[a]	319	- 8	480	368	407[a]	398	- 9
6-29-65	WFlS	1	44.0	41.6	42.6	43.4	+0.8	13.1	12.1	12.7	12.6	-0.1	129	87	108	110	+2	376	288	320	379	+59	384	328	357[a]	426	+69
7- 6-65	WFlS	1	44.0	42.2	43.0	43.7	+0.7	13.0	12.1	12.7	12.5	-0.2	133	85	111	106	-5	384	240	297[a]	382	+85	432	336	383[a]	456	+73
7-13-65	WFlS	1	43.8	42.0	42.9	43.1	+0.2	13.1	12.1	12.6	12.5	-0.1	143	84	112	106	-6	408	288	330[a]	318	-12	464	352	396[a]	403	+ 7
Current mill average:					42.6	43.0	+0.4			12.8	12.5	-0.3			109	107	-2			310	341	+31			378	413	+35
Cumulative mill average:					42.4					12.5					111					309					377		
Mill factor, %					100.5					102.4					98.2					100.3					100.3		
Mill index, %					100.0					101.6					98.2					92.8					99.5		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XX

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL Q

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
4-28-65	W.F.	1	43.6	42.0	42.8	42.4	-0.4	12.8	12.0	12.3	12.1	-0.2	126	94	111	109	- 2	336	256	293	287	- 6	392	336	353[a]	363	+10
5- 8-65	W.F.	2	43.6	41.8	42.4	42.3	-0.1	13.1	12.0	12.5	12.0	-0.5	133	97	113	111	- 2	352	240	285	279	- 6	336	304	317[a]	346	+29
5-19-65	W.F.	21	43.8	41.8	42.6	42.8	+0.2	13.3	11.2	12.4	12.2	-0.2	127	99	114	111	- 3	312	256	284[a]	278	- 6	384	304	336[a]	321	-15
5-29-65	W.F.	1	43.6	42.0	42.8	42.9	+0.1	12.6	11.6	12.1	11.7	-0.4	140	94	120	110	-10	368	272	314[a]	289	-25	384	336	366[a]	363	- 3
Current mill average:					42.6	42.6	0.0			12.3	12.0	-0.3			115	110	- 5			294	283	-11			343	348	+ 5
Cumulative mill average:					42.6					12.2					114					301					366		
Mill factor, %					100.0					100.8					100.9					97.7					93.7		
Mill index, %					100.0					97.6					103.6					88.0					90.3		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXI

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL S

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i.g. Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
6-10-65	----	2	44.4	42.0	43.4	43.6	+0.2	13.3	11.8	12.3	12.3	0.0	136	91	110	108	-2	432	312	373[a]	---		448	368	400[a]	---	
6-21-65	----	1	43.8	41.6	42.3	42.4	+0.1	12.6	10.8	12.1	12.1	0.0	131	95	113	111	-2	400	312	366[a]	---		448	368	391[a]	---	
6-25-65	----	1	44.0	42.0	43.0	43.2	+0.2	12.9	11.8	12.2	12.8	+0.6	118	78	98	104	+6	400	312	361[a]	---		456	360	401[a]	---	
6-28-65	----	2	42.2	40.2	41.6	41.7	+0.1	13.5	12.4	12.9	12.2	-0.7	119	82	105	105	0	376	304	333[a]	---		400	328	371[a]	---	
Current mill average:					42.6	42.7	+0.1			12.4	12.4	0.0			106	107	+1			358	---				391	---	
Cumulative mill average:					43.2					12.4					111					371					410		
Mill factor, %					98.6					100.0					95.5					96.5					95.4		
Mill index, %					100.0					98.4					95.5					107.2					102.9		

TABLE XXII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL T

No samples submitted.

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXIII

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL U

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb. Institute Max.	Min.	Av.	Mill Av.	Diff.	Caliper, points Institute Max.	Min.	Av.	Mill Av.	Diff.	Bursting Strength, p.s.i.g. Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet In Machine Institute Max.	Min.	Av.	Mill Av.	Diff.	Elmendorf Tear, g./sheet Cross Machine Institute Max.	Min.	Av.	Mill Av.	Diff.
No samples submitted.																											

TABLE XXIV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL V

4-28-65	WFlS	2	43.6	42.0	42.6	43.1	+0.5	13.2	12.2	12.6	12.5	-0.1	120	80	100	108	+ 8	368	288	323[a]	344	+21	408	336	385[a]	444	+59
5- 2-65	WFlS	2	43.4	42.0	42.5	43.4	+0.9	13.3	12.2	12.8	12.9	+0.1	127	88	107	111	+ 4	368	296	331	327	- 4	424	328	385[a]	435	+50
5- 3-65	WFlS	2	43.6	42.0	42.4	42.9	+0.5	13.0	12.1	12.6	12.0	-0.6	123	84	102	114	+12	352	280	317	351	+34	432	352	387[a]	416	+29
5-17-65	WFlS	2	43.6	42.0	42.4	42.9	+0.5	13.2	12.1	12.9	12.0	-0.9	124	82	103	121	+18	376	288	313	353	+40	432	352	388[a]	417	+29
6- 3-65	WFlS	2	43.8	42.0	42.8	42.8	0.0	13.3	12.3	12.7	12.4	-0.3	132	90	113	106	- 7	384	280	323	339	+16	464	344	403[a]	430	+27
6- 5-65	WFlS	2	42.0	40.4	41.4	42.5	+1.1	13.3	12.6	13.0	12.7	-0.3	124	79	101	119	+18	416	264	319[a]	334	+15	432	360	395[a]	462	+67
6- 9-65	WFlS	2	43.4	42.0	42.6	42.6	0.0	13.2	12.3	12.8	12.3	-0.5	140	89	112	112	0	360	256	322	367	+45	440	344	389[a]	436	+47
6-10-65	WFlS	2	43.0	41.6	42.2	42.8	+0.6	13.1	12.3	12.8	12.4	-0.4	131	86	109	115	+ 6	384	272	323[a]	345	+22	424	352	385[a]	466	+81
Current mill average:					42.4	42.9	+0.5			12.8	12.4	-0.4			106	113	+ 7			321	345	+24			390	438	+48
Cumulative mill average:					42.6					13.0					110					337					392		
Mill factor, %					99.5					98.5					96.4					95.3					99.5		
Mill Index, %					99.5					101.6					95.5					96.1					102.6		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

TABLE XXV

SUMMARY OF INSTITUTE AND MILL DATA FOR MILL W

June and July, 1965

Date Made	Finish	Mch. No.	Basis Weight, lb.					Caliper, points					Bursting Strength, p.s.i.g.					Elmendorf Tear, g./sheet In Machine					Elmendorf Tear, g./sheet Cross Machine				
			Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill		Institute			Mill	
			Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.	Max.	Min.	Av.	Av.	Diff.
6- 3-65	W.F.	-	43.8	42.0	42.6	42.5	-0.1	13.0	12.0	12.4	12.3	-0.1	128	90	108	105	-3	408	312	347	356	+ 9	416	336	360[a]	389	+29
6- 4-65	W.F.	-	43.0	41.0	42.0	42.0	0.0	12.8	12.1	12.4	12.3	-0.1	136	88	108	108	0	384	288	342	337	- 5	400	320	360[a]	356	- 4
6-11-65	W.F.	-	44.8	44.0	44.1	44.1	0.0	12.6	12.0	12.2	12.2	0.0	154	83	126	119	-7	368	304	342[a]	335	- 7	464	352	399[a]	387	-12
6-18-65	W.F.	-	42.6	40.4	41.7	42.1	+0.4	13.2	12.1	12.6	12.5	-0.1	137	100	113	109	-4	392	304	337[a]	312	-25	448	336	386[a]	396	+10
7- 1-65	W.F.	-	42.2	41.2	41.8	42.2	+0.4	12.5	11.7	12.0	12.0	0.0	133	106	118	114	-4	368	272	313[a]	335	+22	392	328	364[a]	359	- 5
7- 2-65	W.F.	-	42.4	40.0	41.2	41.6	+0.4	12.9	11.8	12.2	12.2	0.0	133	88	110	106	-4	360	304	326[a]	329	+ 3	392	312	359[a]	340	-19
7- 9-65	W.F.	-	44.2	43.4	43.9	44.0	+0.1	13.7	12.0	12.8	12.6	-0.2	152	105	123	115	-8	400	312	349	321	-28	416	336	374[a]	393	+19
7-16-65	W.F.	-	44.0	42.6	43.0	43.1	+0.1	13.0	12.0	12.4	12.3	-0.1	147	104	126	126	0	424	280	336[a]	317	-19	432	360	394[a]	369	-25
Current mill average:					42.5	42.7	+0.2			12.4	12.3	-0.1			117	113	-4			337	330	- 7			375	374	- 1
Cumulative mill average:					42.7					12.4					115					323					360		
Mill factor, %					99.5					100.0					101.7					104.3					104.2		
Mill index, %					99.8					98.4					105.4					100.9					98.7		

[a]This average includes the readings for one or more specimens which tore beyond the 3/8-inch limit.

Note: All "current mill average" data are calculated from the totals of the individual readings.

of linerboard. In addition to the presentations of Institute and mill data described above, Tables IV through XXV also include under each test heading a column labeled "Diff." This column shows the differences between averages obtained at the Institute and those obtained at the mills. The data obtained at the Institute are used as the reference in calculating these differences.

The average test results obtained at the Institute and at the mills are summarized in Table XXVI for the current period. Shown in this table for each mill is the difference for each test between the current mill average based on Institute data and the current mill average based on mill data. In addition, for each test the maximum difference encountered in comparing Institute and mill averages for individual sample lots is shown. In Table XXVII, the differences for each test between the current mill averages based on Institute data and those based on mill data shown in Table XXVI have been converted to per cent (based on Institute data as a reference). In addition, for purposes of comparison, the percentage differences from the previous two bimonthly reports are shown in Table XXVII.

A summary of the agreement obtained in the comparisons of Institute and mill test data for the current period is shown in Table XXVIII. This summary is based on the results given in Table XXVII. The tabulated data show the number of mills, and the percentage of all mills which this number represents, whose average test results for the current period fall within designated percentages from the average test results obtained at the Institute. It may be noted from this summary that agreement between the results obtained at the Institute and those obtained at the mills was generally good.

TABLE XXVI

SUMMARY OF TEST RESULT COMPARISONS (AVERAGE MILL AND INSTITUTE RESULTS) FOR JUNE AND JULY, 1965

Mills[a]	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	S	T	U	V	W
No. samples compared	0	9	4	7	11	8	6	9	7	4	0	8	9	5	5	9	4	4	0	0	8	8
Basis Weight																						
Institute		42.6	42.1	42.3	41.8	42.4	42.8	42.7	42.9	41.7		41.9	42.3	42.5	42.3	42.6	42.6	42.6			42.4	42.5
Mill		43.2	42.4	42.7	42.0	43.2	43.5	42.6	43.1	42.3		42.7	42.4	42.8	42.5	43.0	42.6	42.7			42.9	42.7
Av. diff.[b]		+0.6	+0.3	+0.4	+0.2	+0.8	+0.7	-0.1	+0.2	+0.6		+0.8	+0.1	+0.3	+0.2	+0.4	0.0	+0.1			+0.5	+0.2
Max. diff.[c]		+1.2	+0.5	+0.7	+1.3	+1.1	+1.2	-0.9	+0.5	+0.8		+0.9	+0.7	+0.5	+0.5	+0.8	-0.4	+0.2			+1.1	+0.4
Caliper																						
Institute		13.4	13.4	12.9	12.8	12.5	12.3	13.4	12.9	12.7		12.8	13.0	11.8	12.6	12.8	12.3	12.4			12.8	12.4
Mill		12.9	13.3	12.6	12.5	12.1	12.2	12.9	12.7	12.5		12.6	13.0	11.5	12.4	12.5	12.0	12.4			12.4	12.3
Av. diff.[b]		-0.5	-0.1	-0.3	-0.3	-0.4	-0.1	-0.5	-0.2	-0.2		-0.2	0.0	-0.3	-0.2	-0.3	-0.3	0.0			-0.4	-0.1
Max. diff.[c]		-0.6	-0.2	-0.6	-0.5	-0.6	-0.3	-0.8	-0.3	-0.4		-0.3	+0.4	-0.5	-0.7	-0.8	-0.5	-0.7			-0.9	-0.2
Bursting Strength																						
Institute		108	118	103	113	115	114	118	116	112		113	109	110	110	109	115	106			106	117
Mill		104	110	107	113	113	113	111	111	112		112	109	112	108	107	110	107			113	113
Av. diff.[b]		-4	-8	+4	0	-2	-1	-7	-5	0		-1	0	+2	-2	-2	-5	+1			+7	-4
Max. diff.[c]		-6	-8	+8	±7	±4	-2	-18	-10	-6		-4	-5	+8	-5	-6	-10	+6			+18	-8
Tearing Strength, in																						
Institute		265	381	307	382	295	362	328	342	344		319	277	354	374	310	294	358			321	337
Mill		288	374	295	348	328	339	346	328	--		285	271	357	338	341	283	--			345	330
Av. diff.[b]		+23	-7	-12	-34	+33	-23	+18	-14	--		-34	-6	+3	-36	+31	-11	--			+24	-7
Max. diff.[c]		+35	-16	-23	-69	+67	-52	+59	-29	--		-51	-15	+19	-43	+85	-25	--			+45	-28
Tearing Strength, cross																						
Institute		320	400	367	413	356	379	391	393	365		383	342	371	401	378	343	391			390	375
Mill		351	412	367	391	417	390	400	392	--		377	356	373	386	413	348	--			438	374
Av. diff.[b]		+31	+12	0	-22	+61	+11	+9	-1	--		-6	+14	+2	-15	+35	+5	--			+48	-1
Max. diff.[c]		+55	+19	+20	-58	+111	+33	+28	+40	--		-34	+27	+25	-27	+73	+29	--			+81	+29

[a] Comparison based on averages involved only those samples on which mill test data were submitted.

[b] Average difference is the difference between the Institute mill average and the mill average based on mill test data.

[c] Maximum difference encountered in comparing the Institute average and the mill averages for any sample submitted by that particular mill.

TABLE XXVII

COMPARISON OF INSTITUTE-MILL DIFFERENCES FOR JUNE AND JULY, 1965
Average Difference, %

Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross	Mill	Period	Basis Weight	Caliper	Bursting Strength	Tear, in	Tear, cross
A	Feb.-Mar.	--	--	--	--	--	M	Feb.-Mar.	0	+0.8	+2	-9	0
	Apr.-May	--	--	--	--	--		Apr.-May	+0.2	+2	+3	-10	-2
	Current	--	--	--	--	--		Current	+0.2	0	0	-2	+4
B	Feb.-Mar.	+0.5	-2	-6	+8	+10	N	Feb.-Mar.	+0.5	-3	-2	-4	-2
	Apr.-May	+0.7	-2	-2	+16	+4		Apr.-May	+0.5	-4	0	-3	-0.5
	Current	+1	-4	-4	+9	+10		Current	+0.7	-3	+2	+0.8	+0.5
C	Feb.-Mar.	0	-0.8	-0.9	-8	-4	O	Feb.-Mar.	-0.2	-2	+4	-12	-6
	Apr.-May	-0.2	-0.8	-0.9	-7	-3		Apr.-May	0	-2	+0.9	-14	-6
	Current	+0.7	-0.7	-7	-2	+3		Current	+0.5	-2	-2	-10	-4
D	Feb.-Mar.	+0.5	-2	+0.9	-4	+3	P	Feb.-Mar.	-0.2	-0.8	-2	+11	+8
	Apr.-May	+0.9	-2	0	-4	+3		Apr.-May	+0.2	-2	-2	+7	+9
	Current	+0.9	-2	+4	-4	0		Current	+0.9	-2	-2	+10	+9
E	Feb.-Mar.	+0.2	-0.8	-3	-5	-5	Q	Feb.-Mar.	+0.5	-2	-6	-6	-4
	Apr.-May	-0.5	-2	-0.9	-13	-9		Apr.-May	+0.7	-2	-3	-7	-3
	Current	+0.5	-2	0	-9	-5		Current	0	-2	-4	-4	+1
F	Feb.-Mar.	+2	0	-2	+2	+13	S	Feb.-Mar.	0	-0.8	+0.9	--	--
	Apr.-May	+0.7	0	0	-2	+1		Apr.-May	-0.2	+0.8	+3	--	--
	Current	+2	-3	-2	+11	+17		Current	+0.2	0	+0.9	--	--
G	Feb.-Mar.	+0.9	-0.8	0	+2	+4	T	Feb.-Mar.	--	--	--	--	--
	Apr.-May	+2	-2	0	+4	+6		Apr.-May	--	--	--	--	--
	Current	+2	-0.8	-0.9	-6	+3		Current	--	--	--	--	--
H	Feb.-Mar.	+0.5	-4	0	+3	+1	U	Feb.-Mar.	--	--	--	--	--
	Apr.-May	+0.7	-1	0	+7	+6		Apr.-May	--	--	--	--	--
	Current	-0.2	-4	-6	+5	+2		Current	--	--	--	--	--
I	Feb.-Mar.	+0.2	0	-3	-0.9	-2	V	Feb.-Mar.	+0.2	-4	+4	+3	+11
	Apr.-May	+0.7	+0.8	-3	-2	+4		Apr.-May	+0.7	-5	+3	-2	+10
	Current	+0.5	-2	-4	-4	-0.3		Current	+1	-3	+7	+7	+12
J	Feb.-Mar.	+0.9	-0.8	-2	--	--	W	Feb.-Mar.	+0.5	-0.8	-3	-1	-2
	Apr.-May	0	-2	+2	--	--		Apr.-May	+0.5	-2	-2	-7	-4
	Current	+1	-2	0	--	--		Current	+0.5	-0.8	-3	-2	-0.3
K	Feb.-Mar.	-0.2	-3	+0.9	-3	-3							
	Apr.-May	--	--	--	--	--							
	Current	--	--	--	--	--							
L	Feb.-Mar.	+1	-0.8	+0.9	-8	+1							
	Apr.-May	+1	-0.8	0	-10	-3							
	Current	+2	-2	-0.9	-11	-2							

TABLE XXVIII

SUMMARY OF AGREEMENT BETWEEN INSTITUTE AND MILL RESULTS
FOR JUNE AND JULY, 1965

	Average Percentage Difference Between Institute and Mill Test Results[a]								
	±0.5	±1	±2	±3	±4	±5	±7.5	±10	±17
Basis weight									
Number of mills	8	15	18						
Percentage of mills	44.4	83.3	100.0						
Caliper									
Number of mills	2	5	13	16	18				
Percentage of mills	11.1	27.8	72.2	88.9	100.0				
Bursting strength									
Number of mills	3	6	10	11	15	15	18		
Percentage of mills	16.7	33.3	55.6	61.1	83.3	83.3	100.0		
Tearing strength, in									
Number of mills	0	1	4	4	7	8	10	14	16
Percentage of mills	0.0	6.2	25.0	25.0	43.8	50.0	62.5	87.5	100.0
Tearing strength, cross									
Number of mills	4	5	7	9	11	12	12	14	16
Percentage of mills	25.0	31.2	43.8	56.2	68.8	75.0	75.0	87.5	100.0

[a] Based on the average percentage differences between Institute and mill data given in Table XXVII.

Preconditioning and conditioning data pertinent to the test results obtained at the mills during the current period are given in Table XXIX.

TABLE XXIX

PRECONDITIONING AND CONDITIONING DATA FOR MILL TESTS
JUNE AND JULY, 1965

Mill Code	Preconditioning			Conditioning		
	R.H., %	Temp., °F.	Time, hr.	R.H., %	Temp., °F.	Time, hr.
A[b]						
B	50	72	72	50	72	72
C	--	--	--	50	73	24
D	50	73-74	144-360	50	73-74	3.5-4
E	50	72-73	48-312	50	72	1-5
F	50	72	24	--	--	--
G	--	--	--	50	73	24
H	50	70-73	24	50	70-73	24
I	50	73	24	50	73	24
J[b]	--	--	--	57-68	70	1.5-4
K[b]						
L	35	73	48	50	73	48
M[a]	--	--	--	47-75	80-89	--
N[a]						
O	53-59	72-77	48	50	73	--
P	55	72	--	55	72	--
Q	36-58	76-87	0.5	50	72-73	24
S[b]	50	73	--	50	73	42-288
T[b]						
U[b]						
V	50	70-72	120	50	70-72	120
W	34-35	76-77	8	48-52	72	16

[a] No data were submitted relative to preconditioning and conditioning.

[b] No samples were submitted for evaluation during the current period.

THE INSTITUTE OF PAPER CHEMISTRY

W. N. Hubert, Research Aide

R. C. McKee, Chairman
Container Section